

## PATENT ABSTRACTS OF JAPAN

(11)Publication number : 2001-154760

(43)Date of publication of application : 08.06.2001

(51)Int.Cl.

G06F 1/16  
F16C 11/04  
G06F 1/18  
G09F 9/00  
H01R 13/46  
H01R 13/703  
H01R 35/04  
H05K 5/02  
H05K 7/00

(21)Application number : 2000-272145

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(22)Date of filing : 07.09.2000

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(30)Priority

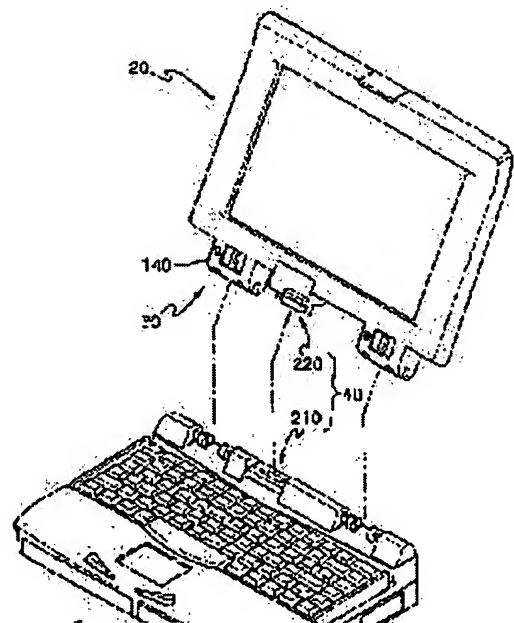
Priority number : 1999 9939329 Priority date : 14.09.1999 Priority country : KR

(54) DISPLAY COUPLING STRUCTURE OF ELECTRONIC PRODUCT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a display coupling structure of electronic products.

SOLUTION: This display coupling structure is characterized by including a main body 10, a display 20 in which an image signal from the main body is inputted and to display it, hinge pins (120,130) to be freely rotatably provided for the main body, a mounting means 30 to include a housing provided for the display to be coupled with the hinge pins and to be rotated together when it is mounted and an optical connector 40 to be provided to mutually correspond to each of the main



body and the display and to transmit the image signal by using light. Thus, the display is easily attached and detached to/from the main body. Consequently, the display can be replaced with the one with better resolution and larger screen size and to be easily portable.

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## LEGAL STATUS

[Date of request for examination] 07.09.2000

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number] 3517192

[Date of registration] 30.01.2004

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

\* NOTICES \*

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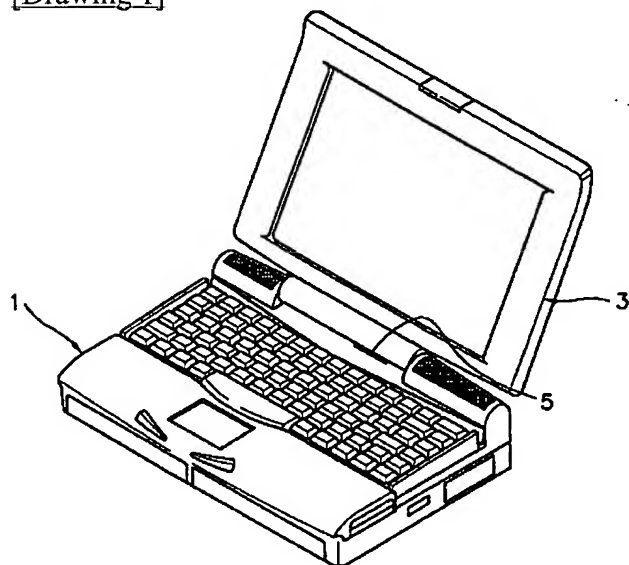
- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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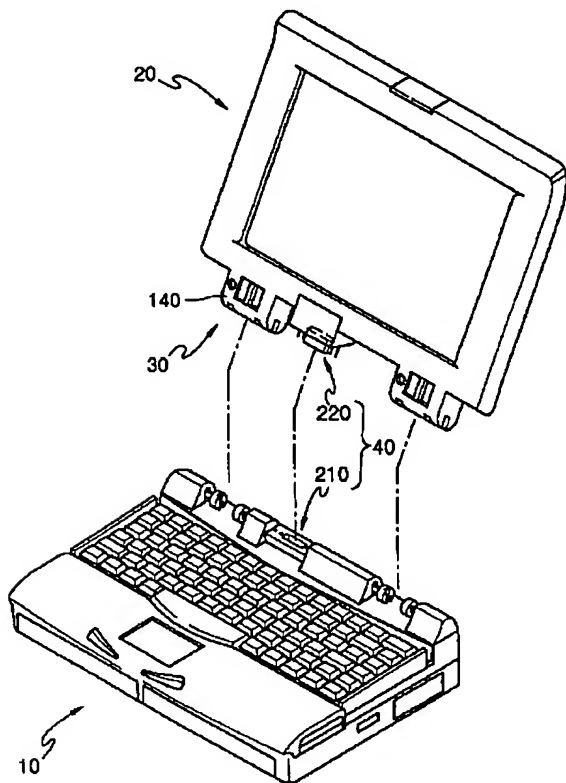
DRAWINGS

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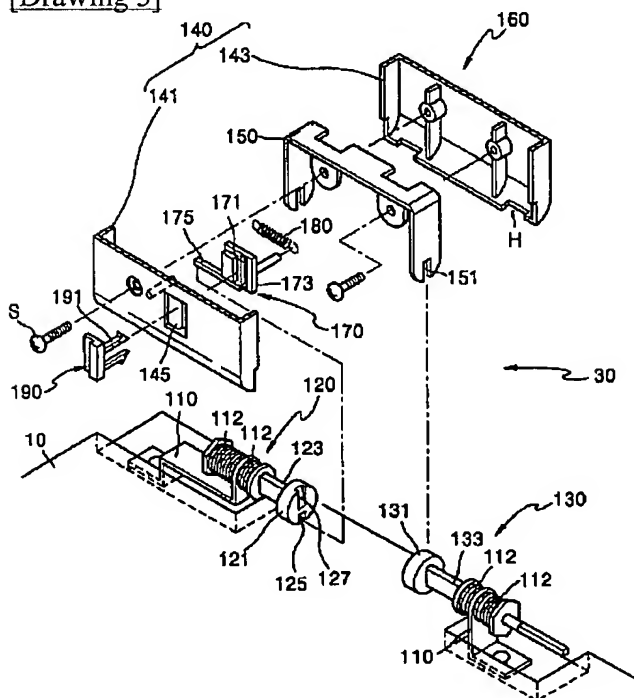
[Drawing 1]



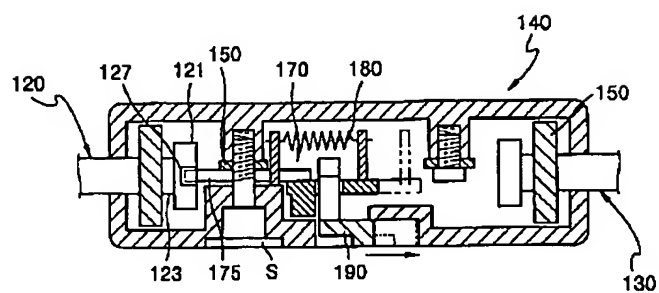
[Drawing 2]



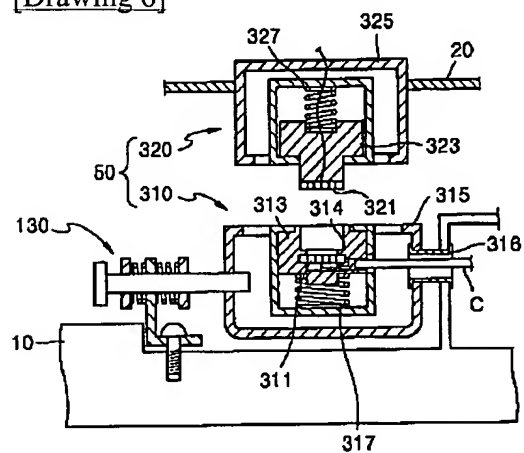
[Drawing 3]



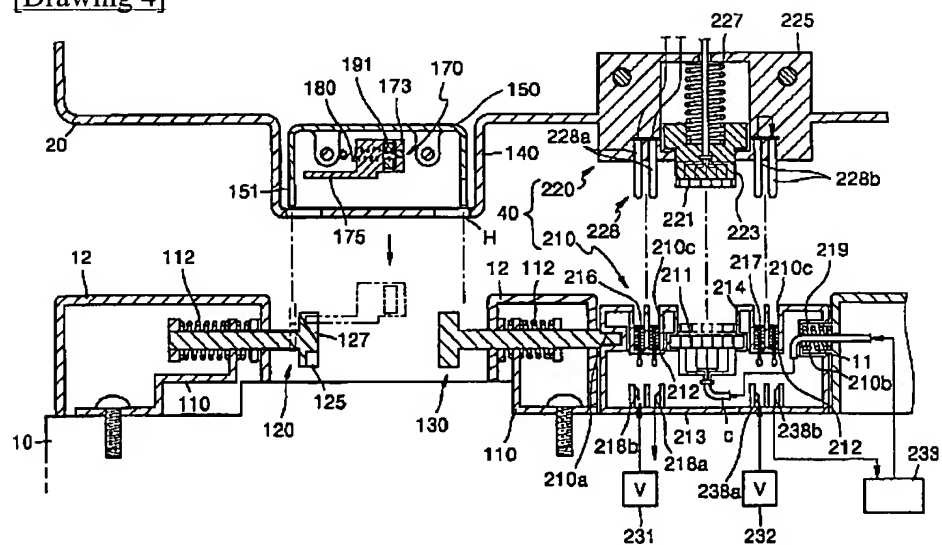
[Drawing 5]



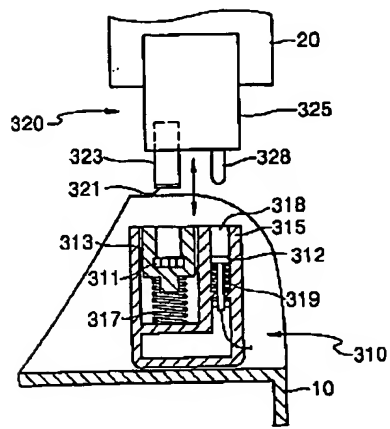
[Drawing 6]



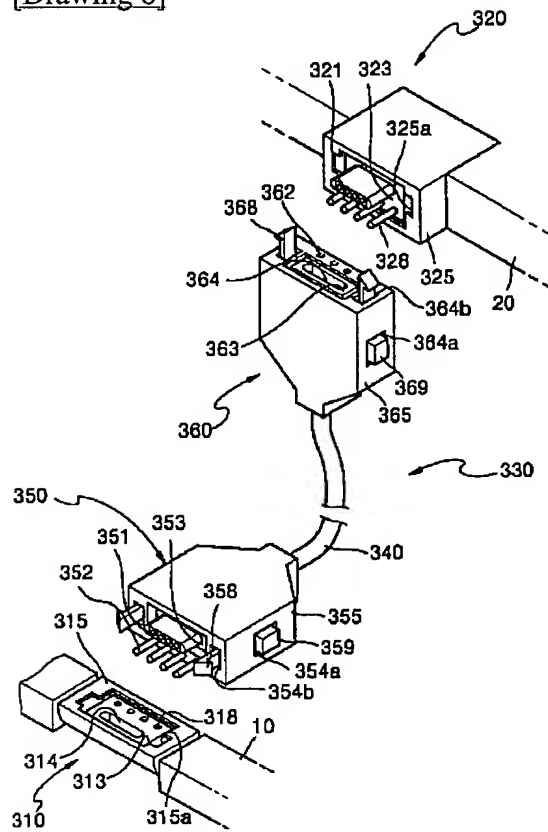
[Drawing 4]



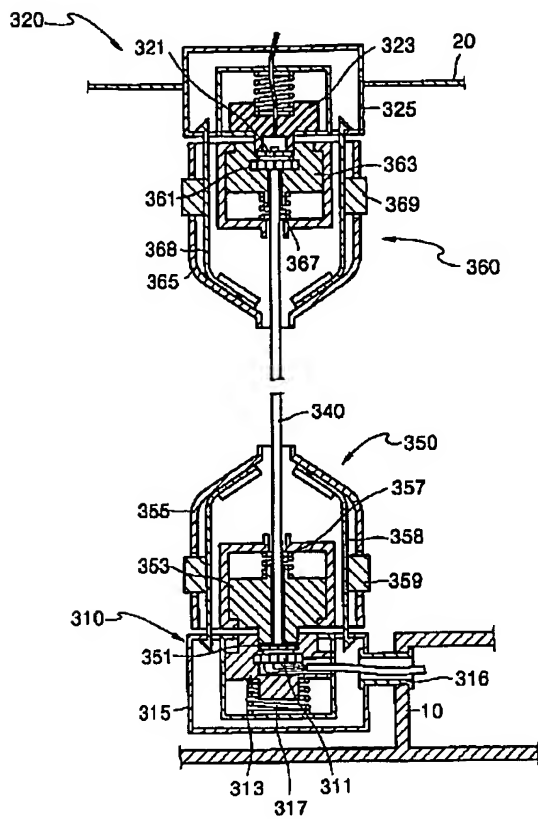
[Drawing 7]



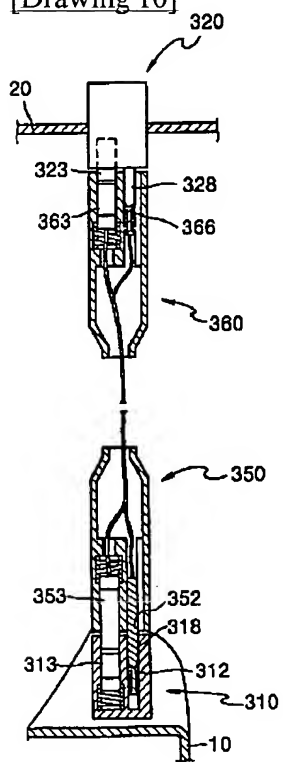
[Drawing 8]



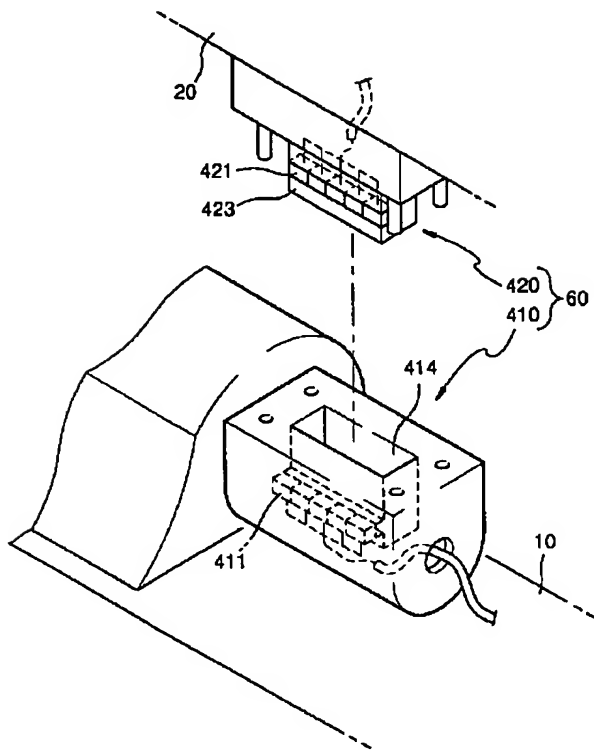
[Drawing 9]



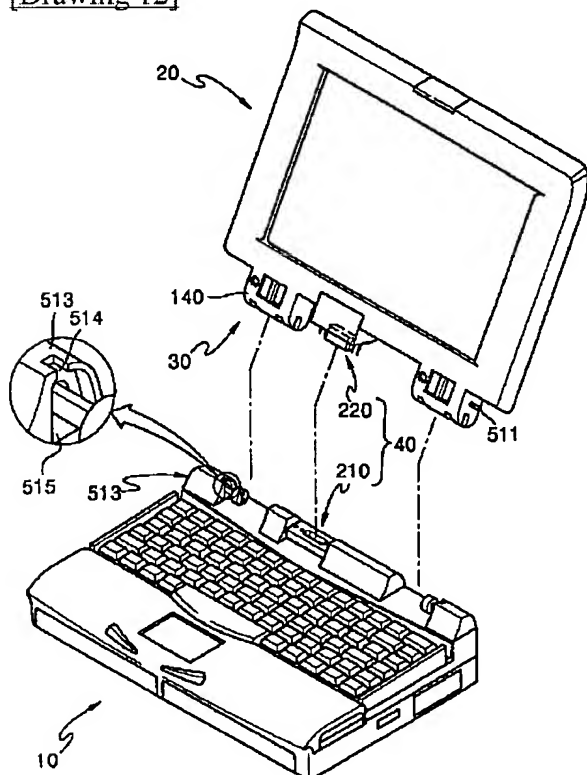
[Drawing 10]



[Drawing 11]



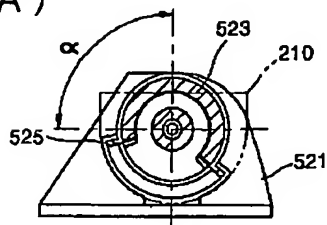
[Drawing 12]



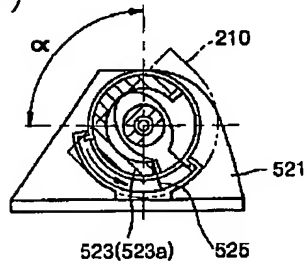
[Drawing 16]



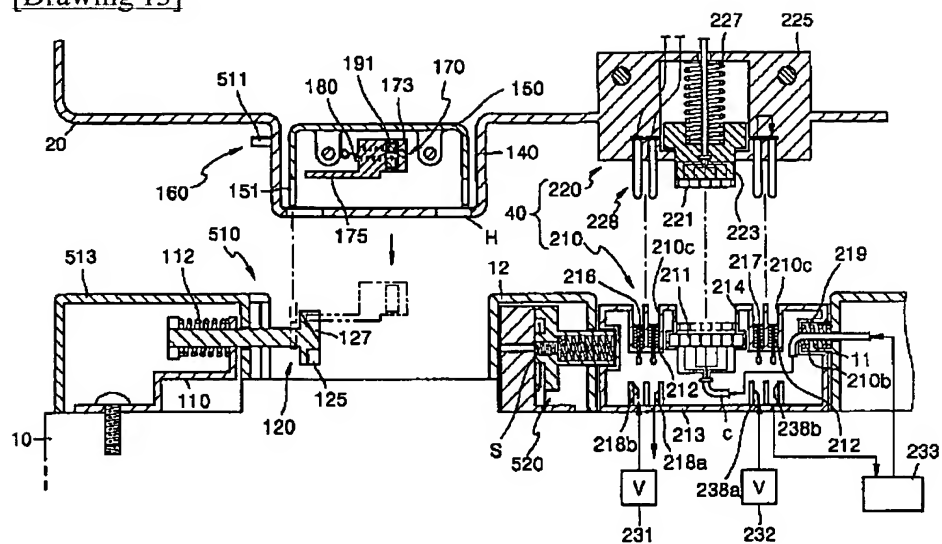
(A)



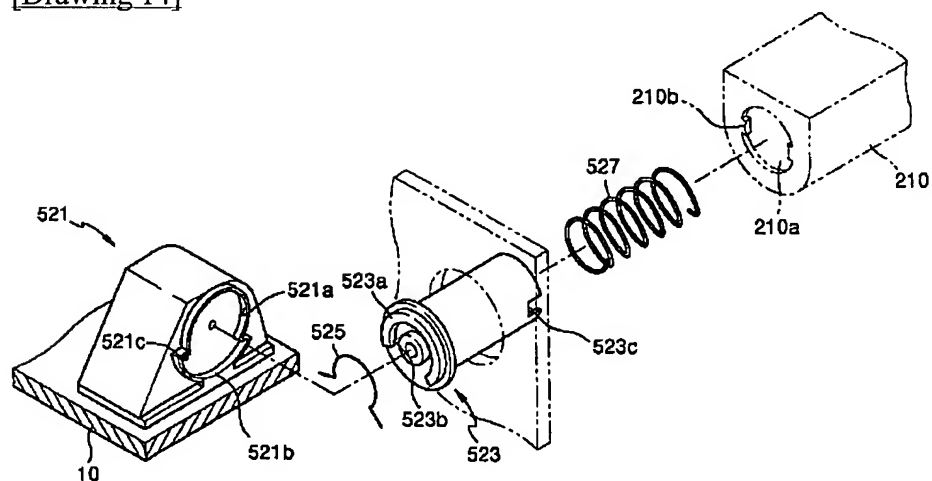
(B)



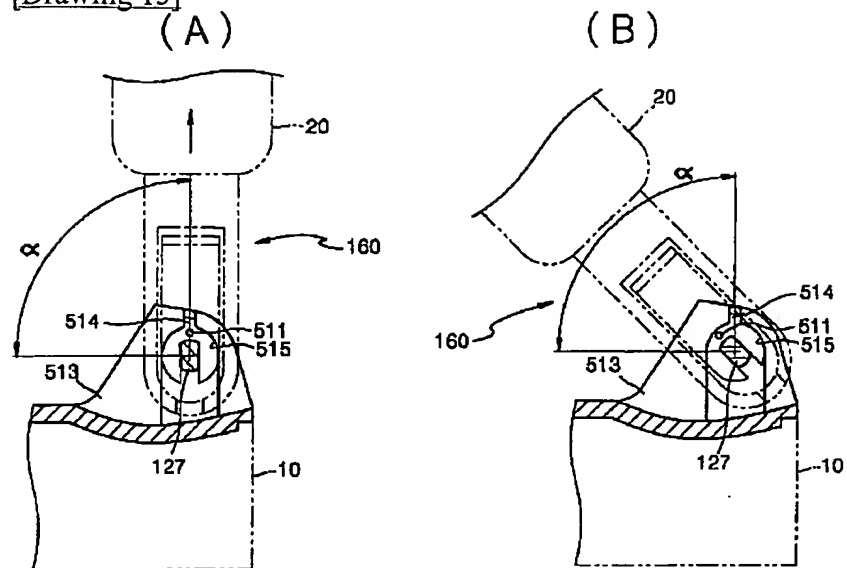
[Drawing 13]



[Drawing 14]



[Drawing 15]



[Translation done.]

[0067] Drawing 12 thru/or drawing 14 are drawings in which the display joint structure of the electronic product concerning the 5th operation gestalt of this invention is shown. Drawing 12 is the rough separation perspective view of the display joint structure concerning the 5th operation gestalt, and drawing 13 is the important section sectional view of drawing 12. And drawing 14 is the separation perspective view extracting and showing the important section of drawing 12. Here, since the same reference mark as the reference mark of the drawing previously shown in drawing 2 thru/or drawing 4 is the same member which has the same function, the explanation is omitted.

[0068] The display joint structure shown in drawing 12 thru/or drawing 14 possesses the wearing means 30 for attachment and detachment of a body 10, a display 20, and a body 10 and a display 20, and association, and the optical connecter 40 and the attachment-and-detachment include-angle accommodation means of having the luminescence module 210 and the light-receiving module 220.

[0069] Said attachment-and-detachment include-angle accommodation means is for maintaining uniformly the attachment-and-detachment include angle of a display 20 so that it may be detached, attached and equipped with a display 20 only at a predetermined attachment-and-detachment include angle to a body 20. An attachment-and-detachment include-angle accommodation means possesses a hinge pin 120, the 1st controller 510 which restricts the attachment-and-detachment include angle between housing 160, and the 2nd controller 520 which carries out location restoration of the posture of said luminescence module 210 so that it may be in agreement with the attachment-and-detachment include angle adjusted by said 1st controller 510.

[0070] Said 1st controller 510 possesses the stop pin 511 which protruded to the side face of the fuselage 140 of housing 160, and the covering member 513 prepared in a body 10 so that some hinge pins 120 may be covered. The 1 side of said covering member 513 is equipped with the guide rail 514 to which it shows penetration and balking of the stop pin 511 at said attachment-and-detachment include angle, and the stop slot 515 by which lead-in formation was carried out so that it might extend in a guide rail 514. When the stop pin 511 which advanced through the guide rail 514 rotates a hinge pin 120 as a core, it shows the migration to said stop slot 515, and it prevents balking and penetration of the stop pin 511 include angles other than said attachment-and-detachment include angle.

[0071] That is, as shown in drawing 15 A, said stop pin 511 can be moved along with a guide rail 514 by being located so that it may correspond to a guide rail 514, only when a display 20 is located in the attachment-and-detachment include angle  $\alpha$ . On the other hand, as shown in drawing 15 B, when a display 20 separates from said attachment-and-detachment include angle  $\alpha$ , since the stop pin 511 and a guide rail 514 shift, in the stop pin 511, it will be stopped by the guide rail 514. Therefore, in this condition, attachment and detachment of a display 20 are impossible. And since rotation is controlled by the friction member 112 unless a hinge pin 120 receives external force after a display 20 is separated, the attachment-and-detachment include angle  $\alpha$  is maintained as it is. Therefore, there is inconvenient [ no / which should adjust the include angle of a hinge pin 120 ] at the time of the next wearing.

[0072] On the other hand, since a display 20 is combined at the attachment-and-detachment include angle  $\alpha$ , said each modules 210 and 220 are also combined at the attachment-and-detachment include angle  $\alpha$ . Therefore, it is in the condition that the display 20 was separated, and the luminescence module 210 should be maintained at the attachment-and-detachment include angle  $\alpha$  for the next association. For this reason, said 2nd controller 520 possesses the rotation spring 525 prepared between the supporter material 521 prepared in a body 10, and the rotation member 523 combined with the luminescence module 210 so that partner rotation may be carried out to this supporter material 521, and the supporter material 521 and the rotation member 523.

[0073] Said supporter material 521 is formed so that it may be enclosed by the place with covering 12 instead of the hinge pin 130 shown in drawing 3. Such supporter material 521 has tubed 1st hold section 521a which protruded so that it might have a predetermined radius in 1 side, and 2nd hold section 521b. Extended formation of the bore is carried out only for predetermined distance, and the circumferential direction of 1st hold section 521a is equipped with said 2nd hold section 521b so that stop pawl 521c may be formed on a boundary with 1st hold section 521a.

[0074] Supporter 523a protrudes on the end of said rotation member 523. This supporter 523a has a configuration corresponding to that 1st hold section 521a so that it may be inserted into 1st hold section 521a. Namely, as for supporter 523a, only the section protrudes on a circumferencial direction by the shape of a doughnut in part centering on a rotation core. Moreover, lead-in formation of the piece of support 523b is carried out at each of the both ends severed to the circumferencial direction of said supporter 523a. The edge of the rotation spring 525 is held and supported by each of this piece of support 523b. Therefore, it is surrounded inside supporter 523a and the rotation spring 525 of an outline round shape is formed so that the both ends may be stopped by piece of support 523b. Moreover, as for the rotation spring 525, the both ends are supported by said stop pawl 521c with Screw S in the supporter material 521 and the rotation member 523 at the time of conclusion.

[0075] On the other hand, the other end of said rotation member 523 is combined with the 1 side of the luminescence module 210 so that it may rotate with the luminescence module 210. For this reason, joint slot 210a in which the other end of the rotation member 523 is inserted is formed in the 1 side of the luminescence module 210. Moreover, rotation stop pawl 210b protrudes inside joint slot 210a. This rotation stop pawl 210b is for preventing from rotating the rotation member 523 freely to the luminescence module 210. Therefore, rotation stop slot 523c corresponding to rotation stop pawl 210b is formed in the other end of the rotation member 523. Moreover, the pressurization spring 527 is formed between the rotation member 523 and the luminescence module 210. This pressurization spring 527 pressurizes the rotation member 523 flexibly at the supporter material 521 side. In order to secure the installation space of this pressurization spring 527, the rotation member 523 has the tubed structure where the other end was opened wide.

[0076] In the above configurations, before applying turning effort to the rotation member 523 at compulsion, as shown in drawing 16 A, the rotation member 523 is located so that it may be surrounded corresponding to the inside of 1st hold section 521a. It is because the motion of the rotation member 523 is controlled when being supported by stop pawl 521c, after the both ends of the rotation spring 525 have been stopped by piece of support 523b. This condition is in the condition that the luminescence module 210 connected with the rotation member 523 is maintaining the attachment-and-detachment include angle alpha to a body 10. Therefore, the light-receiving module 220 comes to be combined with the luminescence module 210 at the same time the stop pin 511 will advance into the stop slot 515 along with a guide rail 514, if a body 10 is equipped with a display 20 in this condition.

[0077] On the other hand, when making compulsion rotate the display 20 where a display 20 is combined with a body 10, the rotation force came to have shown the rotation member 523 to drawing 16 B. That is, the rotation member 523 is rotated, compressing the rotation spring 525. And the both ends of the rotation spring 525 are moved without interference within the 2nd hold section 521.

[0078] Moreover, also where a display 20 is separated from a body 10, if compulsion is made to rotate the rotation member 523, it can be in the condition of drawing 16 B. If the external force which joined the rotation member 523 in such the condition is removed, the elastic restoring force of the rotation spring 525 will change the auto return of the rotation member 523 again into the condition of drawing 16 A. That is, when the rotation member 523 receives external force, a posture is distorted, but where [ free ] external force is removed, it returns to an initial valve position and posture adjustment is carried out so that the luminescence module 210 may maintain the attachment-and-detachment include angle alpha. therefore, the time of equipping a body 10 with a display 20 -- a hinge pin 120 and the light source module 210 -- it is not necessary to adjust each posture